

# **NEW POPULATIONS OF WILD COMMON BEAN DISCLOSED IN NICARAGUA**

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The distribution of wild *Phaseolus vulgaris* L. in southern Central America is not yet fully documented. The species is present in Chiapas, Mexico (Acosta Gallegos et al. 1998), Guatemala (Azurdia et al. 1999; Toro et al. 1990), Honduras (Beebe et al. 1997), El Salvador (Freytag & Debouck 2002), Nicaragua (Delgado Salinas 2001; Freytag & Debouck 2002), Costa Rica (Araya Villalobos et al. 2001), but unknown from Panama (Freytag & Debouck 2002). Because of recent field work the survey is perhaps complete only for Costa Rica (González Torres et al. 2004). For Nicaragua, only three populations – as herbarium specimens - were known (Delgado Salinas 2001; Freytag & Debouck 2002) before this work. With view of confirming/ expanding the above information, and assessing the conservation status of existing populations *in situ*, we carried out an exploration in NW Nicaragua in December 2007 - January 2008, along a methodology described elsewhere (Debouck 1988).

## **RESULTS AND DISCUSSION**

We have found 24 populations for four wild species (*P. leptostachyus*, *P. lunatus*, *P. oligospermus*, and *P. vulgaris*), with a total of 116 herbarium vouchers, collected in five departments of Nicaragua (Table 1). All seem new records about the presence of these species, namely that of *P. vulgaris*, in Nicaragua. Typically this species thrives in the tall understory of modified oak woodlands on fertile deep soils under good rains. The life zone is that of Lower montane humid forest (bh-MBS), according to Holdridge & Tosi (1971), which occupies a very small acreage in Nicaragua, on the slopes of the mountains protected from humid winds coming from the Caribbean sea of Nicaragua (Incer Barquero 2000). The rural inhabitants know it as ‘frijol de venado’ o ‘frijol venado’ [bean of the deer], and it seems that it has been consumed at some time. Populations #3202 and #3205 will disappear *in situ* unless small protected areas are established with a management plan with the participation of the rural communities. Populations #3216 and #3218 in contrast can easily be maintained *in situ* if there is an effective conservation plan of the Biological Reserve Quiabuc and its buffer zones close to the town of Estelí. This type of survey should be continued up to the full inventory of wild bean populations for Nicaragua.

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## **LITERATURE CITED**

- Acosta Gallegos JA, C Quintero, J Vargas, O Toro, J Tohme & C Cardona. 1998. A new variant of arcelin in wild common bean, *Phaseolus vulgaris* L., from southern Mexico. Genet. Resources & Crop Evol. 45 (3): 235-242.
- Araya Villalobos R, WG González Ugalde, F Camacho Chacón, P Sánchez Trejos & DG Debouck. 2001. Observations on the geographic distribution, ecology and conservation status of several *Phaseolus* bean species in Costa Rica. Genet. Resources & Crop Evol. 48 (3): 221-232.

- Azurdia C, DG Debouck, J Tohme, MI Chacón & V González. 1999. Diversidad genética de *Phaseolus vulgaris* silvestre de Guatemala usando marcadores bioquímicos (faseolinas) y marcadores moleculares (AFLPs). *Tikalia* 17 (1): 81-98.
- Beebe S, A Castro, F Rodríguez, O Varela & P Jones. 1997. The use of geographical information systems to locate wild *P. vulgaris* in Honduras. *Annu. Rept. Bean Improvement Coop. (USA)* 40: 26-27.
- Debouck DG. 1988. Phaseolus germplasm exploration. In: "Genetic resources of Phaseolus beans: their maintenance, domestication, evolution and utilization", P Gepts (ed.), Kluwer Academic Publishers, Dordrecht, Holland, pp. 3-29.
- Delgado Salinas AO. 2001. *Phaseolus L.* In: "Flora de Nicaragua – Angiospermas (Fabaceae- Oxalidaceae)", Stevens WD, Ulloa Ulloa C, Pool A & OM Montiel (eds.), Missouri Botanical Garden Press, St. Louis, Missouri, USA, pp. 1042-1046.
- Freytag GF & DG Debouck. 2002. Taxonomy, distribution and ecology of the genus *Phaseolus* (Leguminosae- Papilionoideae) in North America, Mexico and Central America. *SIDA Bot. Miscel.* 23: 1-300.
- González Torres RI, R Araya Villalobos, E Gaitán Solís & DG Debouck. 2004. Wild common bean in the central valley of Costa Rica. *Agron. Mesoam.* 15 (2): 145-153.
- Holdridge LR & JA Tosi. 1971. Mapa de Zona de Vida. Catastro e Inventario de Recursos Naturales. Instituto Nicaraguense de Estudios Territoriales, Managua, Nicaragua, one sheet.
- Incer Barquero J. 2000. Geografía dinámica de Nicaragua. 2<sup>da</sup> edición. Editorial Hispamer, Managua, Nicaragua, 281p.
- Toro Ch. O, J Tohme & DG Debouck. 1990. Wild bean (*Phaseolus vulgaris L.*): description and distribution. International Board for Plant Genetic Resources, and Centro Internacional de Agricultura Tropical, Cali, Colombia, 106p.

**Table 1** – List of all materials found during this exploration.

Collection No	Species	Department	County	Date	Alt masl	Lat N	Long W
3196	<i>lunatus</i>	Managua	Sn Fco Libre	11-12	410	12.39.30	86.05
3197	<i>leptosta</i>	Estelí	Estelí	11-12	930	13.04	86.20
3198	<i>leptosta</i>	Nueva Segovia	Dipilto	12-12	940	13.47	86.35
3199	<i>lunatus</i>	Nueva Segovia	Dipilto	12-12	1030	13.47.30	86.35.30
3200	<i>lunatus</i>	Madríz	San Lucas	12-12	890	13.23	86.37.30
3201	<i>leptosta</i>	Madríz	San Lucas	12-12	980	13.23.30	86.38
3202	<i>vulgaris</i>	Madríz	Las Sabanas	12-12	1080	13.23	86.38
3203	<i>oligosper</i>	Madríz	Las Sabanas	12-12	1250	13.22	86.38.15
3204	<i>lunatus</i>	Madríz	Las Sabanas	12-12	1390	13.21.30	86.38.30
3205	<i>vulgaris</i>	Madríz	Las Sabanas	12-12	1370	13.21.15	86.38.30
3206	<i>oligosper</i>	Madríz	Las Sabanas	12-12	1400	13.20.45	86.38.15
3207	<i>lunatus</i>	Madríz	Palacagüina	13-12	490	13.23	86.25
3208	<i>oligosper</i>	Estelí	Condega	13-12	880	13.22.30	86.16
3209	<i>lunatus</i>	Estelí	Condega	13-12	880	13.22.30	86.16
3210	<i>lunatus</i>	Jinotega	Sn Sebastián Yali	13-12	1010	13.17.30	86.11.30
3211	<i>lunatus</i>	Jinotega	Sn Sebastián Yali	13-12	940	13.15.30	86.09
3212	<i>lunatus</i>	Jinotega	Sn Rafael Norte	13-12	1000	13.12	86.08
3213	<i>lunatus</i>	Estelí	Estelí	14-12	950	13.07	86.23.30
3214	<i>leptosta</i>	Estelí	Estelí	14-12	1250	13.05.45	86.26
3215	<i>oligosper</i>	Estelí	Estelí	14-12	1250	13.05.45	86.26
3216	<i>vulgaris</i>	Estelí	Estelí	14-12	1250	13.05.45	86.26
3217	<i>lunatus</i>	Estelí	Estelí	14-12	1510	13.06	86.26
3218	<i>vulgaris</i>	Estelí	Estelí	14-12	1350	13.06.30	86.26.30
3219	<i>leptosta</i>	Estelí	Estelí	14-12	1230	13.07	86.27